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AUTHOR Boyd, Gary M.
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ABSTRACT

Educational games are usually developed by copying existing recreational games and adding instructional components, or by using the intuitive preferences of the designer. However, existing games attract people through ideological value exemplifications. Moreover, whatever else they teach, games teach ideologies of either preservation, equality, or freedom. Helmar Frank's Political Value Triangle and an analogous Aesthetic Value triangle can be used to construct heuristics to help the educational designer choose games that cultivate the ideological ideals of the school or community concerned. This paper delineates ways of investigating these ideological "metaobjectives" of instruction insofar as they are embodied in specific learning activity packages and discusses several examples. Fifteen references are listed, and six figures illustrate the use of value triangles in game design. (Author/LMM)

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THE USE OF HEURISTICS BASED ON FRANK'S POLITICAL-VALUE TRIANGLE FOR THE ANALYSIS AND DESIGN OF LEGITIMATE EDUCATIONAL GAMES

by

Gary M. Boyd

1982

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Knapptext/Abstract

Educational games are usually developed by copying existing recreational games and adding instructional components. However, existing games attract people through ideological value exemplifications. Moreover, games teach ideologies of: preservation or equality, or freedom, whatever else they teach. Helmar Frank's Political Value Triangle, and an analogous Aesthetic Value triangle can be used to construct Heuristics to help the educational designer to choose games which cultivate the ideological ideals which are held to be legitimate in the school or community concerned.

Some examples are discussed.

1. INTRODUCTION

1.1 Grounds and Concern

To have plausible hope on this small world we all must co-operate and co-operate strategically as well as tactically. The development of the predisposition and potent capability to do so must be the second educational objective. The first educational objective is the development of the rational joyful-meaning-making skill of each individual. This is the first objective because without the desire to live the ability to do so is inconsequential.

The first objective (rational joyful-meaning skills) should be the meta-objective for all educational (as distinguished from merely instructional) activities. The second objective (co-operativity) should be a meta-objective for those educational activities which are to have a "legitimate" claim on public expenditure. (Habermas, 1973).

1.2 Educational Games

The design of educational games like most design activity is an underdetermined process. Even by combining the results of research on teaching and learning, and the 'systems approach' to project management it is not possible to derive algorithmic procedures which fully specify the sequence of optimum decisions for designing educational games. In practice many design decisions are made either by adopting the format of an existing enjoyable game or simply on the basis of the intuitive preferences of the designer. Sometimes such approaches work very well (Levine, 1974) sometimes they result in peculiar side effects. (Megarry, 1978).

Unexpected anti-educational results should not be a great surprise since games in general are successful insofar as people go on wanting to play them. Fundamentally, what makes people want to play is the direct satisfaction of inter-activity and the indirect satisfaction of apparent potency; neither of

which are inherently educational.

We seem to have evolved as beings who have an over-riding imperative to propagate whatever patterns of behaviour (messages, rôles, identity, 'memes') appear to be capable of indefinite propagation on an humanimal substrate. (Dawkins, 1976). Directly-satisfying interactivity (reinforcing feedback) and apparent potency can be either educational or anti-educational: - At one extreme, a successful computer arcade game can be immoral in the waste of lifetime, in the diversion of money from vital needs and in the cultivation of hostile behaviour patterns. At the other extreme, games where learners have to convince each other to form a cooperative team -to produce a play, to synthesize an organic compound or to optimally manage an ecosystem-simulation, to cultivate societally and personally valuable knowledge and skills.

The differences between anti-educational and educational games are not just differences in objectives or content they are communicative and transactive process differences.

1.3 Educational Game Design and Ideology

To outline a strategy for effectively incorporating co-operativity (the second meta-objective) into learning activities, whatever else the developers' proximate-goals may be, is my intention in this paper. Free (autonomous, ego-motivated) co-operation occurs when people have acquired co-operative role repertoires, and when the immediate situation is such that it logically justifies the invoking or playing of a co-operative role. Images which serve to create in peoples' minds highly valued roles for themselves in some dramatic coalition are "ideologies" (Boulding, 1964 Chapter VIII) cooperation achieved through ideology does however tend to suppress the learning process. If one holds an ideology that "explains" everything there is no need to learn,

no need to test reality. Incomplete ideologies and ideologies in juxtaposition are what is wanted for education.

Educational games are not "pure" games, in that their object is not merely the pleasure of rational rule-governed struggle but rather the development of knowledge and skills. They exhibit, in particular, an element of "debate", in the sense of converting learners' thinking to new ways of perceiving/evaluating their worlds. For pupils there is also, and perhaps most importantly, the need to learn the skills of forming friendships with others, and to learn techniques to resist "ideologically" appealing friendships which are individually or socially injurious. (Berger, 1979)

The usual procedures for developing instructional games, however systematized, do not adequately take into account the ideological and aesthetic aspects of game design.

It may seem strange to associate ideology and aesthetics but in fact they are two aspects of one Gaian cybernetic process. The communication and control of culture depends on the propagation of attention-getting, memorable, reproducible messages. That class of such messages which cause people to draw together as friends or in coalitions for bargaining and fighting, and for building things, constitute "ideologies".

At the ideological level a game is reflexive; one may start to play it for ideological reasons, and then find that playing the game teaches one a new ideological perspective, - which may, or may not, lead to more playing of that game. (By game I mean any: bounded, purposive, rule-governed, formally-repeatable, activity involving 2 or more people).

Hence, ideology enters into game design both in the aspect of prima-facie ideological appeal, and in the aspect of the ideological meta-strategies which the game may inculcate.

Many instructional designers (eg. Cherryholmes, 1966) are so caught up with low-level behavioural objectives and the general notion that games are "motivating", that they do not look at the wider systemic picture enough to see which ideologies their games appeal to, nor what ideologies they reinforce. Frequently it is apparent that the concern of the teacher or instruction designer is humanist, but by advocating the adaptation of existing games without considering their ideological implications ho (he or she) encourages the propagation of an undesired ideology.

1.4 Resolution

By considering Helmar Franks' (1971) typology of "ideologies" and by relating it to the appearance and activity of educational games, some heuristics are developed for the instructional designer to enable him or her to produce games which promote humane co-operativity, (ie. which are legitimately educational).

2. The Political Value Triangle

Helmar Frank has categorized existing ideologies in terms of three independent polar values: (HOS) Historically Ordered Security ("Harrung") (E) personal equality (Equalitat) and (F) total freedom (Freiheit). The way this works can be grasped from Fig. 1 (a translation of Frank's Fig. 41, 1971)

INSERT FIG. 1
HERE

Successful actual ideologies involve pairwise combination of the polar values. Simple espousal of one polar value is too boring and too lacking in flexibility to be a basis for attracting people into a coalition, while espousal of all

three either paralyses or trivialises any coalition so formed. An attractive ideology uses preferably two of the widely accepted ideals to legitimate the polemical, exclusionary and solidary actions of the groups which espouse it.

This may all seem somewhat remote from education and instructional activity design, but education at all levels consists of game-like social activities where ideologies contribute to the formation of friendships and coalitions, and to the nature of learning. Education for survival and happiness cannot be based on the repression of aggressive and destructive actions because progress depends on the elimination of false beliefs and the demolition of sclerotic structures as much as upon the synthesis of new truths and the construction of better environments. Consequently, even some games involving coalitions which destroy things to emancipate persons are not merely regrettable facts of life but are educationally necessary undertakings.

Helmar Frank's categorization is consistent with Manheim's (1936) if Manheim's utopias are considered to be F and E ideologies while his narrowly defined "ideologies" are HOS type. Similarly, Hayakawa's categorizations of ideologies as being "past-oriented" (HOS) or "future-oriented" (F and E) can be accomodated reasonably well in Frank's schematization. But Hayakawa has as his third class of ideologies - those which are "present-oriented". Such ideologies may occupy the centre of Frank's triangle. It is also just here that Habermas' ideology of <u>discursive legitimation</u>, and Wayne Booth's <u>rhetorical ideal</u> must be located. Whether the triangle should be considered to be the base of a tetrahedron with a central vertex: <u>total discursive coherence</u> (or something of the sort) is an open question.

<u>2.1 Political Values and Games</u>

No <u>one</u> of the ideal values at the vertices of the triangle can alone serve

as the basis for heuristics for game design because anyone of the three taken alone leads to an unplayable game. Nor can all three value vertices be used equally since they nullify each other. But taken in pairs the value vertices can be used to choose appealing game configurations.

For example: 'Monopoly' that most popular game (which has been used as a model for many instructional games) appears to be based mainly on the values of Freedom and of Equality. The players have equal chances of landing in good properties and of getting good "chance" cards. But there is the "freedom" to buy houses and hotels and charge rent, which introduces an all too realistic positive feedback loop whereby the rich get richer and the poor get poorer.

The whole nature of the game, however, is not to promote either freedom or equality. Rather the entrepreneurial freedom and the chance of equality tend to counteract each other to a large extent, and since the interaction is socially rewarding, the net effect is to make capitalist market arrangements seem natural and normal. While appealing to F and E values monopoly actually teaches the HOS value.

2.2 Operationalization of the Three Political Value Dimensions

If one considers the process of propagating patterns (eg. musical melodies or genetic patterns) three distinct mechanisms can be used:

1) The single pattern can be 'cleaned-up' filtered and amplified to maintain or increase its signal to noise ratio. (Hemostatic filtering)
2) Many copies of the pattern can be made and be scattered around or a sexually reproduced. (Broadcast copying)
3) The pattern can be joined to another pattern (sexual reproduction) which in changed circumstances makes the innovation more memorable or viable than either parent. (conjugative re-creation)

Curiously these three independent propagation mechanisms appear to be directly related to the three ideological values. Homeostatic s/n control to preservation of historical order, copying of general equality, conjugating to freedom. On mature consideration, this is not surprising because friendships and political coalitions usually have as their object the indefinite perpetuation of the identities or roles of players in the game. The game of life is a pattern-propagating and elaborating game where the optimal strategy at any given time is some proportional allocation of resources to the three propagation mechanisms. See figure 2 for the process triangle. INSERT FIG. 2 HERE

Various people in various circumstances select whichever of the three mechanisms seem most propitious and rationalize their selection on one or more of the 3 political ideal values. It is easiest for them to form coalitions with or be friends of others who choose to emphasize the same values.

Exemplifications of Ideological Discrepancy and Rationalizations

There is an educational game which has been developed by Dr. Jetta Megarry designed to create an acute awareness of our tendency to automatically adhere to and rationalize polar pairs of "ideological" values.

Members of a large class are each given a bag of tokens containing many green, many blue, some silver and only a few gold chips. They are told that the essential rules of the game are:

1) Negotiate with others to trade tokens in order to get all your tokens to be one color.
2) If you get a pure gold collection, that is worth 1000 pts. a pure silver collection is worth 600, but a pure green or pure blue collection is worth only 100 pts. (approximate values)

On the surface, and at first sight, this game promises interesting social interaction and the opportunity to excel at negotiation. A priori one might

place it high on the freedom axis and somewhat over toward the equality side.

Fig. 3:

INSERT FIG. 3 HERE

But as the pupils play the game they find that it makes sense to form into coalitions: a coalition of very successful players each holding mostly silver and gold chips, a coalition of middling successful players holding more silver chips than blue or green both of which groups tend to refuse to trade with the "poorest" players. The really rich adamantly refuse; while the middling coalition tries to be a little more generous and sometimes trades with the poor. The poor develop solidarity willy-nilly from being excluded by the others. The game nicely evolves by building on latent antipathetic ideological positions - that of the rich toward maintaining their (HOS Homeostatic) - priveleges that of the middling class toward more use of all three values and that of the poor towards equality. These positions are taken quite complacently and earnestly with even a self-congratulatory air being assumed by the "gold-chip" group.

But the <u>educational</u> moment occurs when the teacher explains that the bags given out to start with did not contain equal numbers of chips and in fact the terminal distribution of "wealth" is found to be almost exactly a reflection of the <u>unfair</u> initial allocations!

At this point, the pupils can experience a liberating insight into their own unconscious conditioning, and / or they can be angry with the teacher for being "unfair". Unfortunately anger without insight - as a defense against insight - does often occur. Nenetheless what the game teaches for those who profit by it is profound insight into the automatically ideological behaviours which most of us have learned and have learned to rationalize with the "higher"

humanist/Christian values of mutually-liberating-love which we believe that we hold.

The anger exhibited probably is not primarilly at the deceitful unfairness of unequal study allocations, but is at the involuntary unmasking of ideological rationalizations.

These conclusions may he readily tested since Megarry's negotiation game is easily set up and is highly appealing a-priori. (Such deceit is not unethical because of the significant number of learners who do gain a valuable working insight from it.)

2.3 Vector Value Characterisation of Game

From the foregoing it is apparent that it is helpful to represent an instructional game on the value triangle not by just one point but rather by a vector extending from the prima-facie value location to a point representing the values actually learned from playing the game. With this notation Megarry's negotiating game can be represented as in Fig. 4:

INSERT FIG. 4 HERE

In play there are two vectors because the lucky winners (1) learn to espouse the preservation of privelege (H) values while the sad losers (2) learn to further espouse equality (E) values (3) after the exposé it turns out to teach Freedom so that the final result vector terminates near the F pole.

The prima-facie appeal values of a game can be approximately quantified by showing it to a number of people from the potential learner population and asking them to make Likert scale ratings of various value statements. These in turn can be transformed by factor analysis or by simpler techniques such as those of Geisler (1974) into a point on the Frank Value Triangle.

Measurement of the values actually taught by a game is somewhat more difficult but still quite possible when the game is structured so that the coalitions/friendships being formed can be clearly observed. If as in Megarry's negotiation game the coalitions become clearly defined and clearly related to polar ideological positions then one may simply count the number of players migrating into each coalition. A further refinement of the value triangle representation then can be to let the width of the arrows representing the value vectors be proportional to the number of people migrating to the different kinds of coalitions. eg. see Fig 5:

INSERT FIG. 5 HERE

Unfortunately, in many games there are rewards for being covert about your values and about the coalitions or friendships a player forms. To analyse these games objectively is much more difficult. Some apparently cooperative tactics will occur by chance, while the utility of various kinds of pay-offs to various participants will differ greatly in hidden ways. Estimates can be made from the logic of the situations and then be rejected, or be confirmed by interviewing players after the playing of the game. Unfortunately again, people's predilection for rationalisations of their actions in terms of socially approved values may seriously threaten the validity of such estimates.

3.0 Legitimacy

Habermas (1973) points out three kinds of legitimacy that public activities can have:

1) historical legitmacy
2) legitimacy conferred by professional expertise or science
3) "discursive legitimacy"

but he ignores a fourth most important kind:

4) aesthetic legitimacy

At a given time certain styles are aesthetically current and normal and anything constructed according to the cannons of the reigning style, or even dressed up in the outward appearance and clichés of the reigning style, seems legitimate to many people. Wilhelminian style, Jugend style, Bauhaus, each in turn gave an air of rightness or belongingness to public buildings.

Aesthetics provides heuristics for the selection of what is valuable under conditions of too many and too complex alternatives. Probably our aesthetic sensibilities are partly evolutionary artifacts of our need to find safe and nourishing places to live, and to find healthy mates. The naturally selected aesthetic-choice heuristics are of course overlaid by the socially conditioned and taught norms of fashion.

However, it is interesting and useful to note that there is much correspondence between Frank's three primary political value dimensions and what I take to be the three primary aesthetic (heuristic-value) dimensions: Order Surprise, and Empathy. Homeostatically preserved socio-economic order (HOS) is often symbolized by the aesthetic order conferred by simple basic building blocks arranged symetrically and rhythmically, as in the Egyptian Roman and British Imperial architectures. The political value 'Freedom' is often aesthetically symbolized by a Surprising Variety of framing, or surprising juxtapositions. Finally aesthetic impressions of Empathic Identification translate directly into a sense of normalcy of political Equality. Fig. 6 illustrates the analogous value triangles as I see them.

INSERT FIG. 6 HERE

The appearance of game-materials (boards, rule books, graphic displays, costumes, sets, lighting, etc) and the sounds of play all induce immediate affective attraction (or repulsion) and also induce a lasting feeling of legitimacy.

Thus it is not first-of-all the rules of a game nor the pay-offs, but rather the sights and sounds of it which attract us. As A.N. Whitehead put it the first stage in an educational cycle is "Romance"; 'Definition" and "Generalization" come later.

The prima-facie ideological appeal of a game is then, partly one of aesthetic values, as well as being one of political values. However, these are usually arranged concordantly in the large serious games of society. Some educational games (such as the electrical Powerhouse site Game, Ellington & Langton, 1975) which have politically attractive rules are not designed to be aesthetically appealing at all, let alone in a concordant way. While others which are aesthetically attractive (eg. some Computer games with sound and color) assert almost nothing socio-politically.

However, each of these mechanisms alone is inadequate to keep a game going so it must be complemented by one of the others. Again the practic - able heuristics lie near the middle of the cybernetic triangle.

CONCLUSION

It is hoped that a useful technique for externalising and exhibiting the hidden higher level teaching effects of learning activities such as games has been synthesized.

A great deal of further work needs to be done to achieve valid and reliable measurements of these kinds.

The three aspects of learning activities, the ideological (HOS, F, E) the aesthetic (O, S, E) and the actual propagative processes (Preserving, Innovatively-

Conjugating, and Copying) are all closely linked in the actual playing of all educational games. As yet for the most part these relations remain unexplored despite their importance for the legitimacy of public educational activities including in particular the introduction of computers into the normal instructional regimen.

The ramifications of our failure to objectify and openly consider the implicit value-framing embodied in teaching and schooling (the so called 'hidden curriculum', Meighan, 1981) are very serious and widespread. For example, the sterile polarisation, and confrontation between those who rationalise their decisions with 'free-market' ideology and those who rationalise theirs in terms of controls to ensure 'equality', is probably a carryover from un-intended childhood socialisation processes. Public rationality cannot be assumed, but must forever be a matter of striving; in particular striving to know and deliberately and democratically choose what we are doing when we implement educational technology.

At best Educational cybernetics' (Boyd, 1975) is concerned with the design and development of systems to communicatively control the desire and ability to go on being able to, and to go on desiring to: enjoy and transmit humane culture. As such, it must consider the implicit aesthetic and ideological mutual control system processes, as well as the obvious directives and feedback loops.

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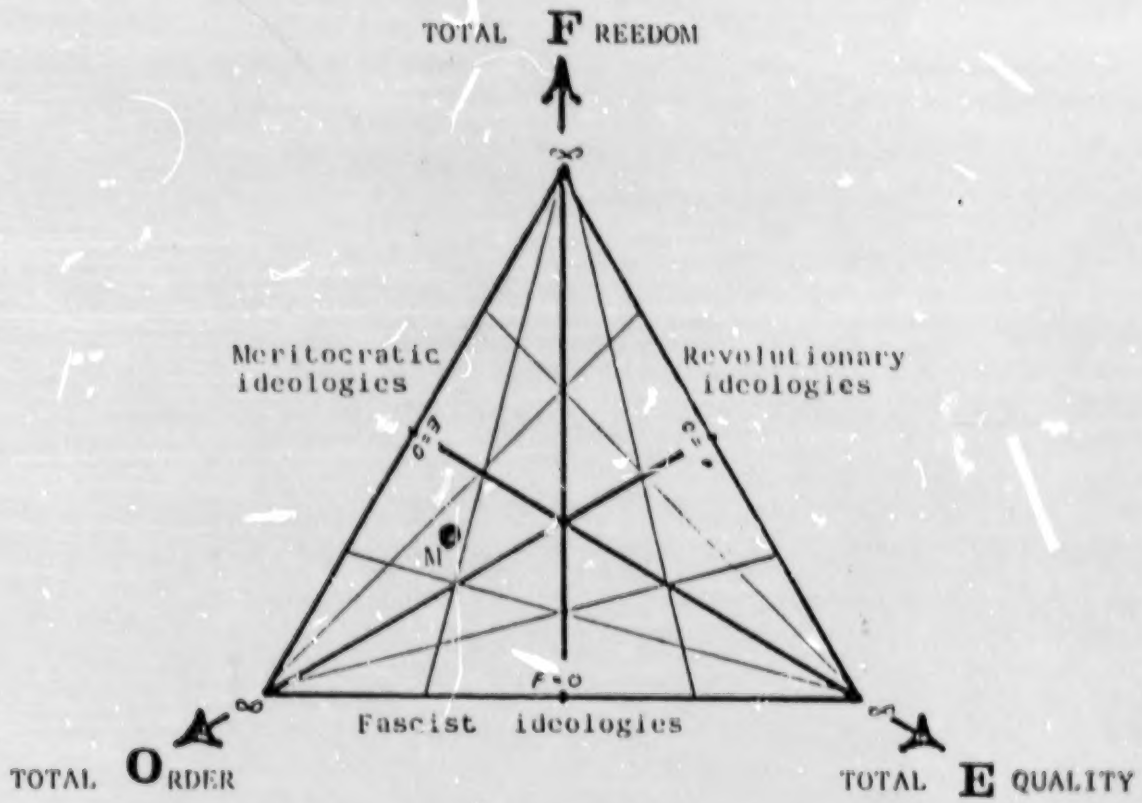

Fig. 1. The Political Value Triangle (after Frank, 1971) The point labelled 'M' represents an appraisal of the values taught by the game 'Monopoly'.

('Total Order' is not a very exact translation of Frank's term 'Harrung' which would appear to mean something like: the preservation of historically legitimated hierarchical privelege.)

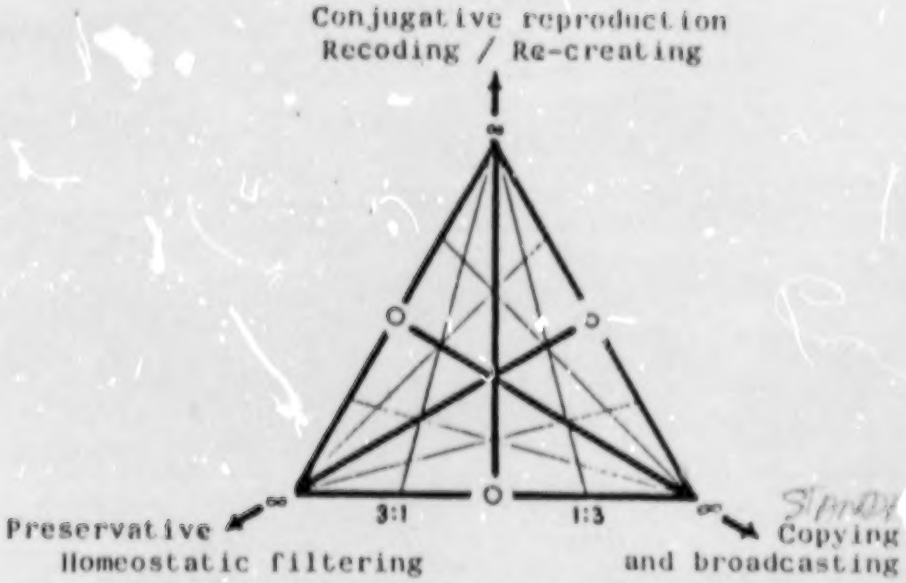

Fig. 2. The three basic kinds of processes for propagating patterns (genes and memes etc.) The triangle now enables one to plot the portion of resources to be allocated to each process under a given strategy.

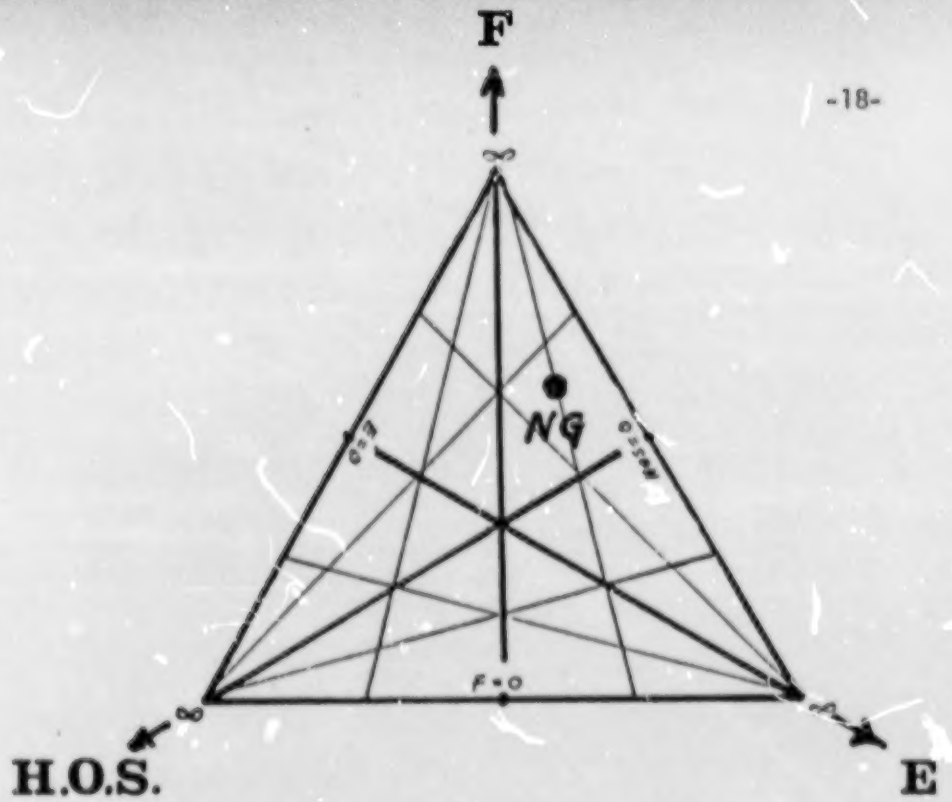

Fig. 3. A-priori rating of the 'negotiation game' N G.

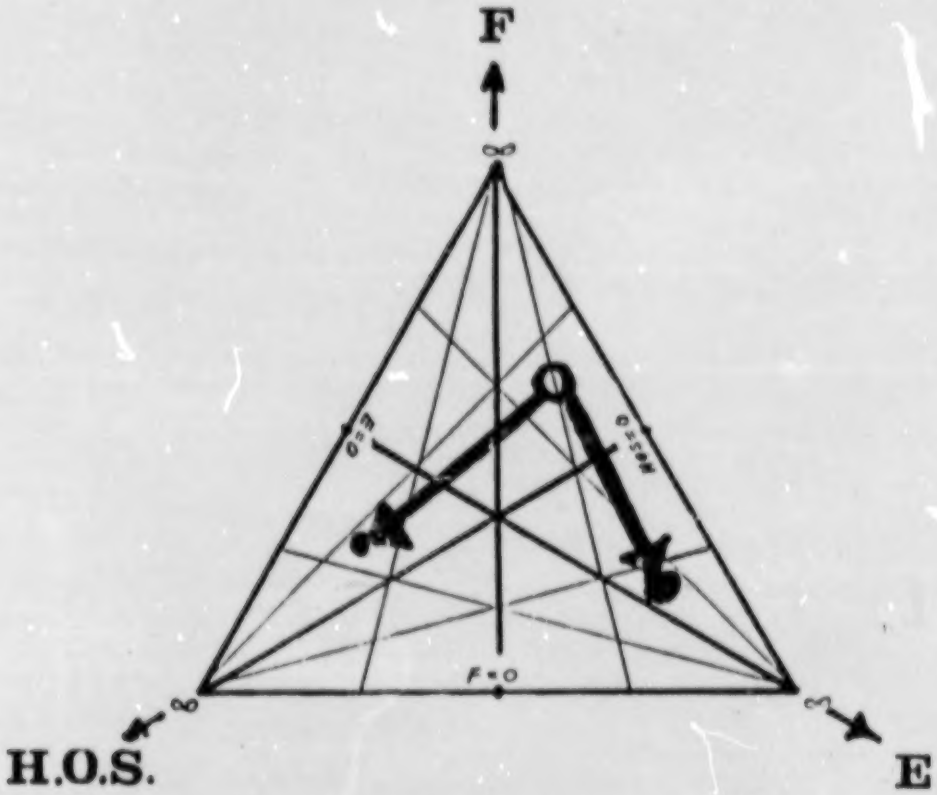

Fig. 4. Negotiation game effects after play but before 'de-briefing'. Gold chip holders near HOS pole, green chip holders towards equality pole.

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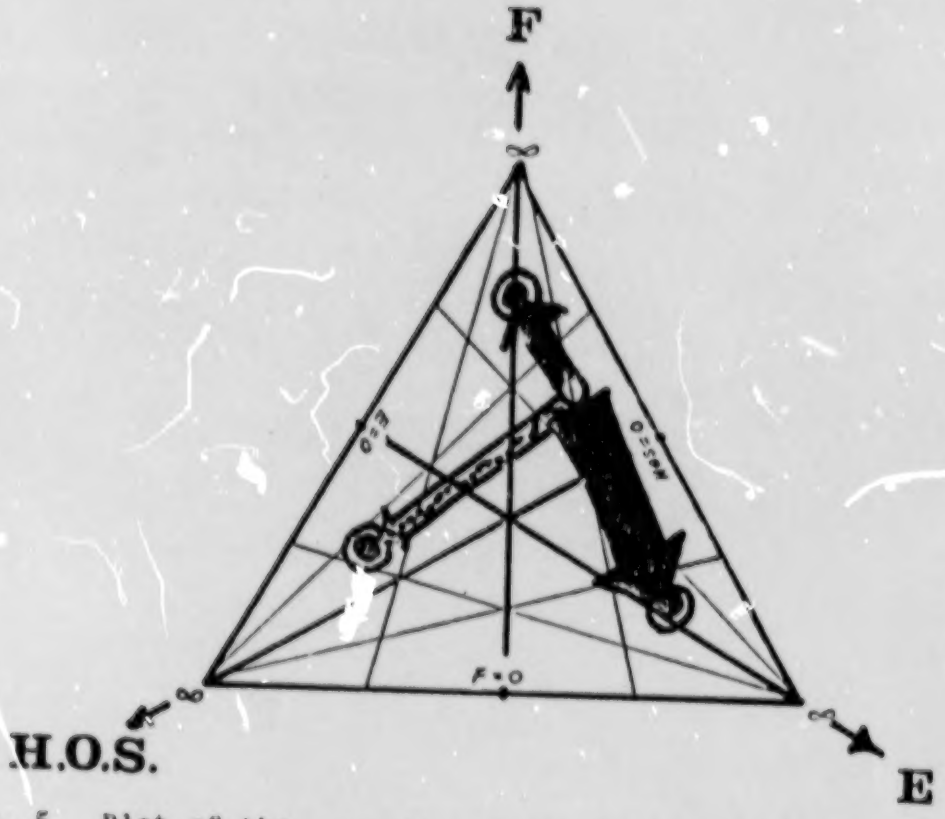

Fig. 5. Plot of the results of the 'negotiation game' with the width of the vectors indicating the number of learners whose appraisals moved toward the respective poles.

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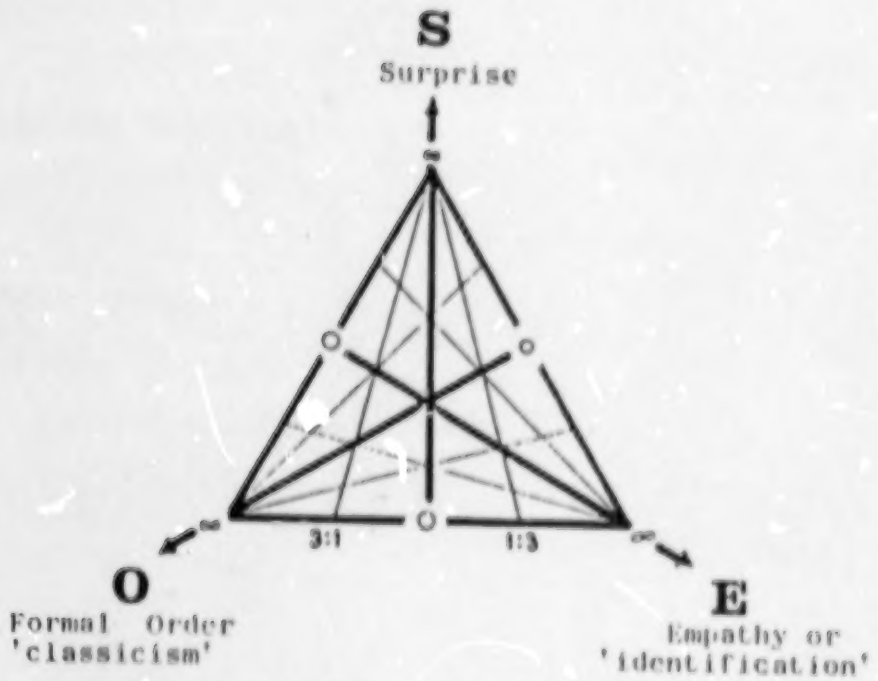

Fig. 6. The Aesthetic Value triangle, exhibiting three independent classes of heuristics for design.